

REMARKS

Substance of Examiner Interview

On Thursday, February 19, 2004, Applicants' representative Gus Larson participated in an Examiner Interview with Examiner Jackson. Mr. Larson had requested the interview to discuss specific wording of claims. Examiner Jackson was asked for assistance in identifying language to be used in apparatus and device claims that would result in a search for an electrostatic discharge device, such as the thyristor previously described in claim 2, coupled between two voltage reference nodes that in a disclosed embodiment are to provide a common reference voltage. Suggested language to amend claim 2 was faxed to Examiner Jackson prior to the interview. After discussing the situation, Examiner Jackson and Mr. Larson agreed that the suggested language of claim 2 would result in a claim search that included first and second circuits coupled to first and second voltage reference nodes as recited, and a substantive action, or allowance. A specific embodiment was identified with reference to the embodiment of Figure 11 of the application, whereby separate circuitry portions are illustrated to be connected to different ground nodes having thyristors coupled between them. Examiner Jackson further indicated that his initial impression was that a 103 rejection would be likely based upon the Applicants' own background even with an apparatus reciting two voltage reference nodes, as agreed upon. Mr. Larson indicated that any such rejection would be dealt with within the substance of any responses.

Response to Previous Action

Claims 1-17 now stand canceled. Claims 18-32 are rejected by the Office. New claims 33-43 have been added.

Claims 2-17 have been canceled without prejudice. Based on the cancellation of claims 8 and 13, removal of rejections of the application based on claims 8 and 13 is requested. Claim 32 now depends from claim 31 as suggested by the Office.

Claim 18 has been rejected under § 102 as anticipated by Li or in the alternative under § 103 as obvious over Li. In addition, claim 18 has been rejected under § 102 as anticipated by Consiglio or in the alternative under § 103 as obvious over Consiglio. New claims 42 and 43

depend from claim 18. Claim 18 has been amended based upon the Examiner interview to recite a first circuit coupled to a first voltage reference node and a second circuit coupled to a second voltage reference node. In addition, Claim 18 now recites an anode node coupled to the first voltage reference node and connected to one or more regions of the electrostatic discharge protection device including the first region, wherein all regions of the discharge protection device connected to the anode node are of a common conductivity type. Neither Li nor Consiglio disclose or suggest an electrostatic discharge protection device containing the indicated elements as recited in claim 18. In addition, the arguments applied to claim 30, herein, with regards to well ties are applicable to the obvious rejections of claim 18. Therefore, with respect to the § 102 rejections, each and every element of claim 18 is not disclosed alone by Li or Consiglio. With respect to the § 103 rejection, neither Li nor Consiglio suggest the combination of elements of claim 18. Therefore, withdrawal of the rejections of claim 18, and its dependent claims, under § 102 and § 103 is requested. In addition, claims dependent from claim 18 provide additional points of novelty.

Claim 21 has been rejected under § 102 as anticipated by Li or in the alternative under § 103 as obvious over Li. In addition, claim 21 has been rejected under § 102 as anticipated by Consiglio or in the alternative under § 103 as obvious over Consiglio. Claim 21 has been amended to recite an electrostatic discharge protection device operable to provide a current path and a capacitance of less than 120 Femtofarads between the first voltage reference node and the second voltage reference node during an electrostatic event, the electrostatic discharge protection device comprising a thyristor coupled between the first voltage reference node and the second voltage reference node to provide the current path. None of the references disclose an electrostatic discharge protection device having the recited capacitance. As disclosed in the Background of the application this capacitance is advantageous over prior art methods of electrostatic protection between voltage reference nodes that use diodes, which have relatively large associated capacitances on the order of 300 femtofarads. There is no disclosure in either Li or Consiglio, nor is there any suggestion in either Li or Consiglio that would lead one of ordinary skill to use an electrostatic discharge protection device as claimed providing the recited capacitance without the use of hindsight. In addition, the arguments applied to claim 30 herein, discussing a specific embodiment enabling the lower capacitance are applicable to claim 21. Therefore, withdrawal of the rejections of claim 21, and its dependent claims, under § 102 and §

103 is requested for the reasons indicated. In addition, claims dependent from claim 21 provide additional points of novelty.

The rejection of claim 27, and its dependent claim, is requested to be withdrawn for similar reasoning as claim 21.

Claim 30 has been rejected under § 102 as anticipated by Li or in the alternative under § 103 as obvious over Li. In addition, claim 21 has been rejected under § 102 as anticipated by Consiglio or in the alternative under § 103 as obvious over Consiglio. Claim 30 has not been substantively amended. Claim 30 recites an anode coupled to the first n-doped region only through the first p-doped region and a cathode coupled to the second p-well only through the second n-doped region. The Office states that the "only through . . ." limitations are considered obvious variants of the [Li] structure. Elimination of the cathode p-well and anode n-well contacts is not considered patentable because rudimentary thyristor structure likewise does not have these contacts and it would not be a patentable step to remove the contacts in the [Li] structure. Providing the contacts was an improvement in controlling the thyristor properties. Removing the well contacts in a Li structure is not a patentable step over Li." The Office additionally states that "capacitance has not been lowered by removing the ties". Applicants respectfully traverse the Office's position.

Neither Li nor Consiglio disclose the combination of elements as recited. Therefore, the rejections of claim 30 under § 102 are respectfully requested to be withdrawn. The rejection of claim 30 under § 103 based on either Li or Consiglio is requested to be withdrawn for the reasoning put forth below.

Notwithstanding the Office's statements, recited above, the Applicants have identified a unique combination of elements resulting in a lower capacitance across voltage reference nodes. As discussed in the Background of the application, this is advantageous over higher capacitance solutions of the prior art. The Office position is that whether the recited invention of claim 30 uses a thyristor with or without well ties is not relevant because a thyristor without well ties is a rudimentary structure. Based on this statement, it appears that the Office may be taking Official Notice to this effect. To the extent Official Notice is being taken, if any, it is argued that the mere existence of elements absent a suggestion or motivation to combine them, within the

reference, does not establish a clear and unmistakable technical line of reasoning underlying the proposed combination used to reject claim 30. In fact, because Li discloses ESD protection for a signal, and not between voltage reference nodes, a lower capacitance would be undesirable as it would be more likely to result in a latchup condition. Thus, the disclosure of Li would not solve the same problem. Therefore, documentary evidence supporting the proposed combination, or an affidavit or declaration setting forth specific factual statements and explanation to support the finding, is requested.

Notwithstanding whether Official Notice has been taken, an apparatus having a novel combination of elements has been identified that is advantageous in that it reduces the capacitance between voltage reference nodes thereby increasing signal isolation. The non-obvious nature of this implementation is actually supported by the fact that, contrary to the Office's position, that removal of well ties does reduce the capacitance. The low capacitance nature of the disclosed embodiments, and claimed as a capacitance in claims 21 and 27, is supported in the specification by the specific embodiment of FIG. 5, which illustrates an embodiment with the well ties removed. Contrary to the Office's position, removal of the well ties does provide for a lower overall capacitance, which is beneficial in the specific application solving a specific problem identified by the present application. The overall capacitance of prior art well tie layout is illustrated in Figure 2 of the application and reproduced below as FIG. A showing capacitive structures. The prior art capacitance (C_{pa}) is defined by the equation $C_{pa} = C_z + C_{nw}$. This is further illustrated with respect to Figure A below where the capacitive structures are illustrated as being connected in parallel.

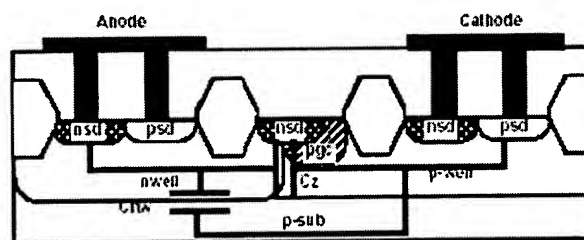


Figure A

The reduced capacitance between the anode and cathode is supported by the specific embodiment (C_{new}) of the present disclosure is shown in Figure B below. By removing the well

ties, capacitive structures are coupled in series. The resulting capacitance (C_{new}) is $C_{new} = [(C_a)(C_c)(C_z+C_{nw})]/[(C_a)(C_c)+(C_z+C_{nw})C_c+Ca(C_z+C_{nw})]$, Where C_{new} is inherently less than C_{pa} when the well ties are removed.

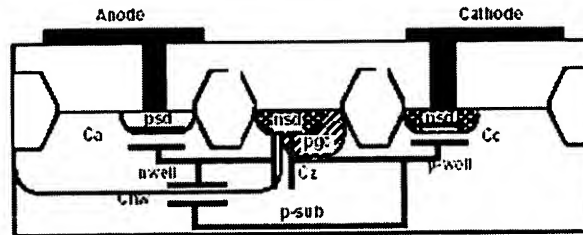


Figure B

For at least the reasons put forth above, it is respectfully requested that the rejection of claim 30, and its dependent claims, under sections 102 and 103 be withdrawn.

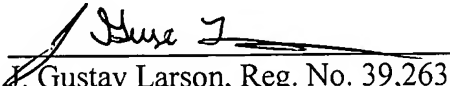
Claims 33 through 43 have been added and are believed novel and non-obvious over the art of record.

Based on the arguments and amendments herein, it is respectfully requested that all rejections be withdrawn. Should the Examiner deem that any further action by the Applicants would be desirable for placing this application in even better condition for issue, the Examiner is requested to issue a formal Notice of Allowance for all pending claims.

Applicants do not believe that any additional fees beyond those identified are due, but if the Commissioner believes additional fees are due, the Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50-2469.

Respectfully submitted,

3-5-04
Date


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